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A comparison of HIV risk practices among unprotected sex-seeking older and younger men who have sex with other men

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Abstract

Purpose: In recent years, much attention has been devoted to understanding the HIV risk behaviors of younger men who have sex with men (MSM). Recent data suggest that HIV is becoming an increasing problem for older adults, but little attention has been devoted to understanding their HIV risk behaviors or the factors that underlie their risk taking. This study provides a comparison of these issues among younger and older MSM.

Methods: The data come from a subset of younger (ages 18–39, $n = 113$) and older (ages 50+, $n = 109$) men participating in a national study of 332 men who use the Internet to find other men for unprotected sex. Men were sampled randomly from 16 websites. Data were collected via telephone interviews conducted in 2008 and 2009.

Results: Younger and older men reported comparable involvement in HIV risk, including involvement in unprotected sex, proportion of sex acts involving internal ejaculation, number of times having anonymous sex, and number of times having multiple-partner sex. Generally speaking, the factors underlying the risk practices of younger and older men were quite different (e.g. self-esteem and condom use self-efficacy for younger men, versus HIV serostatus and depression for older men).

Conclusions: Older MSM using the Internet to find partners for unprotected sex engage in high rates of behaviors that place them at risk for contracting or transmitting HIV. They were just as likely as their younger counterparts to practice these behaviors. The factors “fueling” involvement in risk generally differ for older and younger men, thereby warranting the development of age-specific HIV interventions that can take into account the unique life circumstances and needs of older MSM.

Keywords

Older men; older MSM; HIV risk; Internet

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Introduction

To date, approximately one million Americans have been diagnosed with AIDS and estimates suggest that nearly one-quarter million more are living with asymptomatic HIV disease or with HIV infection that has not developed into AIDS [1]. Men who have sex with other men (MSM) comprise the largest proportion of these individuals, accounting for 57% of all reported cases of AIDS with a known source of transmission and 53% of all HIV-positive persons who believed that they knew how they became HIV-infected [1]. This percentage has been fairly stable over time, with recent evidence suggesting that it has been on the rise during the past several years [1,2].

In light of this, numerous studies have been conducted to identify why, three decades into the HIV/AIDS epidemic, so many men continue to place themselves at risk for contracting HIV. Many factors have been identified, including the belief that engaging in unprotected sex is an expression of individual choice [3,4], the belief that engaging in unprotected sex is an expression of masculinity [5–7], the perception that AIDS antiretroviral drugs have made HIV/AIDS less of a health concern now than in prior years [8,9], a fear of being rejected sexually by partners who dislike condoms [9], the belief that sex is more pleasurable when condoms are not used [4,10,11], feeling “burned out” by worrying about becoming HIV-infected [8,10], and feeling a greater sense of emotional connectedness to sexual partners with whom one had unprotected rather than protected sex [11,12].

Recent epidemiologic trends have also shown that, over the course of the past 10–15 years, the proportion of all Americans diagnosed with AIDS comprised by older adults has risen slowly but steadily each year. This is true regardless of whether the term “older adults” is defined as persons aged 60 or older, 55 or older, or 50 or older. From 1993 to 2009 (the most recent reporting year for which complete data are available), the proportion of all persons diagnosed with AIDS at age 60 or beyond has doubled, rising from 2.5% in 1993 to 3.4% in 1999 to 4.4% in 2005 to 5.5% in 2009 [1,13–15]. Likewise, a doubling of the proportion of all persons aged 55 or older occurred in the AIDS statistics during this period, rising steadily from 4.9% of all Americans diagnosed with AIDS in 1993 to 5.4% in 1999 to 9.4% in 2005 to 11.9% in 2009 [1,13–15]. If the definition of “older adult” is relaxed to include persons aged 50 or older, the proportion more than doubled from 1993 to 2009, rising steadily from 9.5% in 1993 to 23.5% in 2009 [1,13–15].

A number of factors are responsible for the HIV risk that older adults face. First, many older individuals perceive themselves to be at very low risk for acquiring HIV [16,17]. If they do not think that they have a great chance of becoming infected with HIV, it stands to reason that they will not take the steps necessary to ensure their sexual safety (e.g. using condoms). Second, knowledge levels regarding the specific behaviors that can/lead to the transmission of HIV have been shown to be low among older adults [16,17], despite documented evidence of their desire to know more about HIV risk practices and steps that they can take to reduce their personal risk [18,19]. If these individuals are unaware or unsure about the inherent riskiness of the behaviors in which they are engaging, their risk for acquiring HIV is heightened. Third, most HIV/AIDS educational and prevention programs have tended not to target their messages at older audiences, or to provide older adults with

age-specific educational campaigns where HIV/AIDS are concerned [16,17]. As a result, many older adults may feel uncomfortable attending HIV education, prevention, and/or intervention programs that are populated principally by younger persons, for fear of “standing out in a crowd” or being unwelcomed by people who are young enough to be their children or grandchildren. Fourth, research has shown that professionals in the health care industry (e.g. physicians, nurses, social workers) who have regular contact with older adults typically do not speak with these persons about such matters as sexual practices and sexual safety [17,20]. This has been attributed to the health care professionals experiencing some level of discomfort talking about a sensitive, personal, private matter such as sex with people who are their elders, as well as denial on the part of many health care professionals with respect to the sexual activities of their older patients/clients. One unfortunate consequence of this practice of not addressing sexual activities and sexual safety with older adults is that many of them are deprived of necessary health-maintenance information that could have been provided to them by trusted professionals in the health field.

Despite the long-standing trend for MSM to comprise the “lion’s share” of new AIDS diagnoses in the United States and despite the fact that older adults account for an increasingly large proportion of all new AIDS diagnoses, in recent years, there has been a paucity of research focusing on older MSM, and an especial lack of research designed to understand their specific sexual practices and their beliefs and attitudes with regard to HIV risk taking. In a qualitative study of the issues faced by older MSM (defined as those aged 40+ in this particular study), Murray and Adam [21] noted that older men generally attribute HIV risk taking to feelings of low self-worth, loneliness, social isolation, and marginalization from the gay community. Depression was also cited as a perceived risk factor for HIV risk taking among older gay men. The authors noted (p. 85)

There is a widespread consensus among the participants in this study that a sense of social devaluation sets the stage for the “trade-off” of sexual safety for emotional needs... It was almost like he [the older man] should be thankful [for the sex he had with a younger man]. The men over forty in this study report feeling less able to assert themselves with younger men, and strongly [at]tempted to accommodate their desires even if they included unsafe sex.

In addition, some older MSM may attribute their lack of condom use to an inability to achieve or maintain an erection due to loss of penile sensitivity [21]. Many sexually active older MSM do not recognize themselves as facing an elevated risk for HIV as they get older and/or do not perceive HIV to be a serious health threat [22,23]. Consequently, they engage in risky sexual behaviors because they do not think that they themselves are vulnerable to HIV. In a study comparing HIV risk involvement among “younger” older men (i.e. those aged 40–59) and “older” older men (i.e. those aged 60+), Jacobs and colleagues [22] found that substantial proportions of men in both age groups reported engaging in high-risk practices, such as unprotected insertive and/or receptive anal sex, oftentimes with partners of unknown HIV serostatus. Most of the sexually active men in their study had had more than one sex partner during the past six months (64%) and many reported having engaged in sex while high during that time (32%). Nearly one-half (49.6%) of the men had unprotected anal sex during that time, and almost one-half of those men did not believe that that unprotected

sex placed them at risk for HIV. Attempting to understand the factors associated with risk involvement, these researchers noted that the multivariate factors associated with engaging in more unprotected receptive anal sex were (1) being aged 40–59 rather than 60+, (2) being HIV-positive, (3) being a recreational drug user, (4) having more male sex partners, and (5) having less internalized homonegativity [22]. Additionally, the multivariate factors associated with engaging in more unprotected insertive anal sex were (1) being aged 60+ rather than 40–59, (2) being HIV-positive, (3) being a recreational drug user, (4) being a Viagra user, (5) having more male sex partners, and (6) being more optimistic about the future [22]. Reporting on a meta-analysis of published studies focusing on substance use and risky sex among older MSM, Heath et al. [2]. found that most older MSM are sexually active and that substance abuse is another factor underlying risky sex among older MSM. Drug use/abuse was also found to be a factor differentiating between sexually active and sexually abstinent HIV-positive MSM in Lovejoy and colleagues' research [24].

In the present study, the sexual and HIV risk practices of MSM aged 50 and older are examined, and compared to those reported by MSM aged 18–39. (Men aged 40–49 have been excluded from these analyses so as to provide a “neat” age-related comparison between younger and older men.) The study addresses two principal research questions: (1) To what extent do older men engage in behaviors that place them and/ or their sexual partners at risk for acquiring HIV? Are older men engaging in risky behaviors at levels that are comparable to, greater than, or less than those reported by their younger counterparts? (2) What are the factors that underlie their involvement in HIV risk taking? Are these factors the same for older and younger MSM?

Method

Sampling and recruitment

The data reported in this paper come from *The Bareback Project*, a National Institute on Drug Abuse-funded study of men who use the Internet specifically to find other men with whom they can engage in unprotected sex. The data were collected between January 2008 and May 2009. A total of 332 men were recruited from 16 different websites. In the present paper, only the data for men aged 18–39 (hereinafter referred to as “younger men”; $n = 113$) and those aged 50 and older (hereinafter referred to as “older men”; $n = 109$) are used. Some of the websites catered exclusively to unprotected sex (e.g. Bareback.com, RawLoads.com, BarebackRT.com) and some of them did not but made it possible for site users to identify which persons were looking for unprotected sex (e.g. Adam4Adam.com, Men4SexNow.com, Squirt.org). A nationwide random sample of men was derived, with random selection being based on a combination of the first letter of the person's online username, his race/ethnicity (as listed in his profile), and the day of recruitment. Recruitment efforts were undertaken 7 days a week, during all hours of the day and nighttime, variable from week to week throughout the duration of the project. This was done to maximize the representativeness of the final research sample, in recognition of the fact that different people use the Internet at different times.

Depending upon the website involved, men were approached initially either via instant message or email (much more commonly via email). As part of the initial approach, a brief

overview of the study was provided and a website link to the project's online home page was made available, to provide men with additional information about the project and to help them feel secure in the legitimacy of the research endeavor. As part of the administration of the informed consent procedures, all men were given the opportunity to ask questions about the study before deciding whether or not to participate.

Data collection

Participation in *The Bareback Project* entailed the completion of a one-time, confidential telephone interview covering a wide array of topics. Interviews were conducted during all hours of the day and nighttime, 7 days a week, based on interviewer availability and participants' preferences, to maximize convenience to the participants. All of the study's interviewers were gay or lesbian, to engender credibility with the target population and to enhance participants' comfort during the interviews. Interviews lasted an average of 69 min (median = 63, *s.d.* = 20.1, range = 30–210). Men who completed the interview were compensated \$35 for their time. Prior to implementation in the field, the research protocol was approved by the institutional review boards at Morgan State University, where the principal investigator and one of the research assistants were affiliated, and George Mason University, where the other research assistant was located.

Measures used

The questionnaire was developed specifically for use in *The Bareback Project*, with many parts of the interview derived from standardized scales previously used and validated by other researchers.¹ The interview covered such subjects as: degree of "outness," perceived discrimination based on sexual orientation, general health practices, HIV testing history and serostatus, sexual practices (protected and unprotected) with partners met online and offline, risk-related preferences, risk-related hypotheticals (i.e. asking the person what he thought he would be most likely to do in specific risk-involved situations posed by the researcher), substance use, drug-related problems, Internet usage, psychological and psychosocial functioning, childhood maltreatment experiences, HIV/AIDS knowledge, and some basic demographic information. The study was based on a Syndemics Theory conceptual model [39,40], which has been shown to be applicable to understanding HIV risk practices among MSM [41–43].

A variety of questions pertaining to substance use/abuse behaviors were included. Men were asked about their lifetime and past-30-day use of different types of mood-altering substances: alcohol, marijuana, powder cocaine, crack cocaine, heroin or other opiates, hallucinogens, ecstasy, club drugs other than ecstasy (e.g. ketamine/"Special K," Rohypnol/"roofies," or GHB), methamphetamine, and non-prescription use of sedatives or depressant drugs. In addition, men were asked the number of days using each drug during

¹The questionnaire included scales used and validated by other researchers to measure such phenomena as self-esteem [25], depression [26], attitudes toward condom use [27], condom use self-efficacy [28], childhood maltreatment experiences [29], knowledge about HIV [30], locus of control regarding HIV safety [31], partner communication skills [32], current life satisfaction [33], optimism about the future [34], impulsivity [35], extent of "outness" as a gay or bisexual man [36], and perceptions of being stigmatized as a result of one's sexual orientation [37]. Lifetime and recent substance use information was collected using a format very similar to that employed by the *Risk Behavior Assessment* [38]. Additional information about these scales and their psychometric properties in the present study may be obtained by contacting the author.

the 30 days prior to interview (continuous), the average number of times using each drug on a “typical” day of use during the preceding month (continuous), and the number of times using each drug “shortly before or while having sex with someone” (continuous).

In addition, participants were asked both lifetime and past-30-day prevalence questions (in yes/no format) about their experiences with each of 13 problems resulting from using alcohol and/or other drugs. These measures included such problems as substance use leading to problems in one’s family relationships, friendships, or job situation; inability to stop using or reduce one’s alcohol and/or other drug use; experiencing serious physical ailments or blackouts as a result of substance use; losing interest in activities or people as a result of substance use; and developing drug tolerance or experiencing withdrawal symptoms due to long-term continued use. These items were used to create scale measures that were found to be reliable (Kuder-Richardson₂₀ = 0.87 and 0.79, respectively).

Very detailed data were also collected about men’s sexual behaviors. All data, except where noted below, were collected for the 30 days prior to interview and all measures were continuous in nature. Some of the measures represent practices that entail high risk for contracting or transmitting HIV, and some represent behaviors with a lower (but not zero) risk for HIV transmission. Men were asked about their experiences (i.e. number of times engaging, number of sex partners) with insertive and receptive oral sex (protected and unprotected), insertive and receptive anal sex (protected and unprotected), and vaginal sex (protected and unprotected). Coinciding with these measures, separate questions were asked about whether these practices did or did not entail internal ejaculation. In addition, participants were asked about oral-anal contact (receptive and insertive), felching (i.e. eating semen out of another man’s anus), masturbation to the point of ejaculation (receptive and performing), using and sharing previously used sex toys, double penile anal penetration (receptive and insertive), external ejaculation (receptive and performing), deep tongue kissing, sex involving physical restraint (receptive and performing), and multiple-partner sex. They were also asked about the number of sex partners they had had during the past month, and their best estimate of the number of sex partners they had had during their lifetime.

Data were also collected for a variety of sex-related preferences. For these items, men were asked to identify how much, on a scale from 0 to 10, they liked having sex in a particular manner and then how many times during the previous month they had actually engaged in that behavior (continuous measures). The sex-related preferences measures assessed rough sex, sex in public places (e.g. parks or restrooms), sex that was “wild” or “uninhibited” (respondents self-defined these terms), anonymous sex, and sex that occurred in places like gay bath houses. Four additional ordinal measures, with responses ranging from “not at all” to “a lot,” assessed how much men were sexually aroused by the sight, smell, taste, and feel of ejaculatory fluid.

Analysis

By and large, comparisons of older and younger men’s involvement in specific risk behaviors were made via the use of Student’s *t*-tests, because the dependent variables were

continuous in nature. In this portion of the paper, results are reported as statistically significant whenever $p < 0.05$.

In the part of the analysis that pertains to identifying the factors associated with risk taking among older versus younger men, separate multivariate analyses were undertaken for the two age groups. Multiple regression was selected as the analytical method because, in each instance, the dependent variable was continuous in nature. Separate multiple regression analyses were performed for younger and older men, and for each of the four outcome measures involved, so that the final equations indicated the best fit data for each particular dependent (i.e. HIV risk) measure for the age group in question.

Because the sample size was halved for these multivariate analyses (due to the separation of the age groups), the restriction of $p < 0.05$ for retaining factors was relaxed to $p < 0.10$, to accommodate the smaller sample size and reduced statistical power. This “relaxation” of the standard $p < 0.05$ requirement for labeling a finding to be statistically significant was deemed appropriate because of the way that small sample size affects effect size, and how this is reflected in tests of probability [44,45]. Additionally, the decision to “relax” the standard $p < 0.05$ to $p < 0.10$ was made because of issues concerning Type II statistical errors. That is, with the smaller sample sizes available for this paper’s subgroup analyses, relying upon the more-standard, more-rigorous $p < 0.05$ convention would run a great risk of failing to pay attention to what, in many instances, were sizable differences between groups. As most statistics textbooks readily point out, $p < 0.05$ is a widely accepted convention used when interpreting statistical findings; but it not a requirement or a “hard and fast” rule [46,47]. Additionally, striking a balance between Type I errors and Type II errors is important. With smaller sample sizes (such as that available in the younger-versus-older men comparisons undertaken in conjunction with the present study), finding ways to guard against the impact of Type II error is important if meaningful interpretation of research findings – and decisions regarding what to do based on that interpretation – is to be possible [48,49].

Initially, in this paper, bivariate analyses were conducted to identify the factors that merited further consideration in the multivariate analysis, which entailed the use of multiple regression. Items that were identified as being statistically significant predictors were selected for inclusion in the multivariate equations. Then, both forward-selection and backward-elimination approaches were examined to develop “best fit” models that contained only contributory items. As discussed in previously published reports (see, for example, Klein [50]), *The Bareback Project* utilized a Syndemics Theory approach in which several categories of items – namely, demographic variables, substance use/abuse factors, measures of psychological and psychosocial functioning, childhood maltreatment experiences, and risk-related attitudes – were examined as potentially relevant (i.e. hypothesized) factors underlying risk practices. Accordingly, these were the types of measures that were examined and analyzed as independent variables in the multivariate analyses examining the factors associated with risk taking among older versus younger MSM. Additional information about these specific measures may be obtained upon request by contacting the author; but that information has been omitted from detailed explanation here, in the interest of conserving space.

Results

Sample characteristics

In total, 332 men participated in the study. The present research is based on 222 of those men, 113 of whom were between the ages of 18 and 39 (i.e. younger men) and 109 of whom were aged 50 or older (i.e. older men). Table I provides a comparison of the younger and older men in the sample. Racially, the sample is a fairly close approximation of the American population [51], with 73.9% being Caucasian, 8.1% being African American, 9.0% self-identifying as Latino, 6.3% self-identifying as biracial or multiracial, 2.3% being Asian, and 0.5% being Native American. A larger proportion of the older men were Caucasian compared to the younger men in the study sample (87.2% versus 61.1%, $p < 0.001$). The large majority of the men (87.8%) considered themselves to be gay and almost all of the rest (11.7%) said they were bisexual. Older and younger men were equally likely to self-identify as gay (91.2% versus 84.4%, $p = 0.124$). On balance, this sample of men was fairly well-educated: About 1 man in 7 (14.4%) had completed no more than high school; 34.2% had some college experience without earning a college degree; 28.8% had a bachelor's degree; and 22.5% were educated beyond the bachelor's level. Older and younger men were equally (un)likely to have completed no more than a high school education (11.9% versus 16.8%, $p = 0.300$). Consistent with the demography of the US population [52], 29.3% of the men lived in rural or low-density population areas (fewer than 500 persons per square mile), 22.1% lived in urban or high-density population areas (more than 5,000 persons per square mile), with most of the latter group (16.2% of the sample) living in very high-density population areas (more than 10,000 persons per square mile). There were no differences in the population density in the areas in which the younger and older men lived (6354.4 persons per square mile versus 7031.5, $p = 0.732$). Slightly more than one-half of the men (57.7%) reported being HIV-positive; the rest (42.3%) said that they were HIV-negative. In all likelihood, the high percentage of HIV-positive men comprising this sample is attributable to the specific nature of this research sample – that is, men who actively sought partners for unprotected sex online. Not surprisingly, older men were more likely to be HIV-infected than younger men were (68.8% versus 46.9%, $p = 0.001$).

Prevalence of drug-related risk behaviors

Older and younger men were equally likely to report illegal drug use during the month prior to interview (57.8% versus 64.6%, *n.s.*), and the same was true with regard to drugs that were “harder” than marijuana (23.9% versus 23.9%, *n.s.*), including methamphetamine (14.7% versus 17.7%, *n.s.*). Older and younger men reported comparable amounts of illegal drug use (all types combined) during the previous month (27.9 versus 26.8 times, *n.s.*). During their lifetimes, older and younger men had experienced comparable numbers of drug-related problems (3.0 versus 3.6, *n.s.*), although older men experienced fewer drug-related problems than their younger counterparts during the month prior to interview (0.4 versus 1.1, $p = 0.003$).

Prevalence of high-risk sexual behaviors

The data revealed that the large majority of older and younger men alike were sexually active during the month prior to interview (87.2% of the older men versus 90.3% of the

younger men, *n.s.*). Sexually active men in both age groups were equally likely to report having had more than one sex partner during the previous month (88.4% of the older men versus 85.3% of the younger men, *n.s.*), and they reported having comparable numbers of sex partners during that time (8.6 partners for the older men versus 11.3 partners for the younger men, *n.s.*). Sexually active men in both age groups were equally likely to report having had at least some unprotected sex during the preceding month (98.9% of the older men versus 99.0% of the younger men, *n.s.*), and older and younger men recently had unprotected sex comparable percentages of the time (93.8% of the time for older men versus 91.0% of the time for younger men, *n.s.*). Older and younger men were, from a statistical standpoint, equally likely to report having had at least some sex involving internal ejaculation during the previous month (85.1% of the older men versus 90.3% of the younger men, *n.s.*), and they engaged in sex involving internal ejaculation about equally frequently (36.8% of the time for older men versus 38.7% for younger men, *n.s.*). Both groups reported comparable rates of engaging in unprotected anal sex (84.3% unprotected anal sex for the older men versus 81.2% for the younger men, *n.s.*) and comparable rates of having anal sex involving internal ejaculation (51.6% of the time for the older men versus 54.5% of the time for the younger men, *n.s.*).

Older men reported having sex involving the simultaneous insertion of two penises into a partner's anus just about as many times during the previous month as their younger counterparts did (0.2 times versus 0.3 times, *n.s.*). Likewise, older and younger men reported statistically comparable rates of receiving two penises in their anus simultaneously (1.1 times versus 2.0 times, *n.s.*). From a statistical point of view, older and younger men acknowledged having engaged in felching approximately the same number of times during the previous month (0.8 times versus 1.9 times, *n.s.*). Men in both age groups reported comparable recent numbers of times having engaged in multiple-partner sexual encounters (1.9 times versus 3.3 times, *n.s.*), either in the form of three-way sexual arrangements, larger-group sexual encounters, or both. Similarly, older men and younger men reported nearly identical involvement in sexual situations in which they themselves were "pimped out" by a sex partner for other men to use sexually (0.4 times versus 0.9 times, *n.s.*) or in which they "pimped out" one of their sex partners for other men to use sexually (0.5 times versus 0.4 times, *n.s.*).

Prevalence of lower-risk sexual behaviors

From a statistical standpoint, older men said that they had put their mouths or tongues into or onto a sex partner's anus (i.e. rimming) just as many times during the preceding month as their younger counterparts did (12.2 times versus 8.7 times, *n.s.*). Likewise, the two groups reported having been rimmed by a sex partner comparable numbers of times as each other (6.5 times for older men versus 8.5 times for younger men, *n.s.*). Older and younger men reported similar numbers of times during the recent past in which they had sex while being physically restrained by a sex partner (0.2 times versus 0.4 times, *n.s.*) or while physically restraining one of their sex partners (0.6 times versus 0.2 times, *n.s.*). Both groups said that they had shared a sex toy with a sex partner about the same number of times during the previous month (2.2 times for older men versus 1.7 times for younger men, *n.s.*). Older and younger men were about equally involved in recent sexual activities that entailed ejaculating

onto one of their sex partners rather than inside of that person (2.8 times versus 3.3 times, *n.s.*) or having one of their sex partners ejaculate onto rather than inside of them (2.2 times versus 3.4 times, *n.s.*). Similarly, older and younger men reported comparable recent involvement in sex in which they had masturbated a sex partner to the point of ejaculation (1.7 times versus 1.8 times, *n.s.*) or in which a sex partner had masturbated them to the point of ejaculation (1.0 times versus 1.6 times, *n.s.*).

Sex-related preferences

Older men and younger men were nearly equally likely to say that they enjoyed having anonymous sex (66.1% of older men did versus 69.0% of younger men, *n.s.*) and, from a statistical standpoint, the two groups engaged in anonymous sex approximately the same number of times during the past month (2.5 times versus 10.7 times, *n.s.*). Older men and younger men were equally likely to say that they liked to have sex in places like gay bath houses (46.7% of older men did versus 45.5% of younger men, *n.s.*), and both groups of men reported having done this about the same number of times during the preceding month (1.0 times versus 1.5 times, *n.s.*). Younger men tended to prefer their sex to be physically rougher than older men did (mean score of 6.2 on a 0–10 scale, compared to 5.1 for older men, $p < 0.001$), but younger and older men alike reported having engaged in rough sex about the same number of times during the previous month (4.0 times versus 3.1 times, *n.s.*). Younger men tended to like having sex in public places, such as restrooms, bookstores, or parks, more than older men did (mean score of 3.9 on a 0–10 scale, compared to 2.5 for older men, $p = 0.002$), but men in both age groups reported having engaged in this practice to a comparable extent during the previous month (1.3 times versus 0.6 times, $p = 0.083$). Older men and younger men liked having “wild” or “uninhibited” sex to the same extent (both groups scored 2.4 on a 0–10 scale, *n.s.*) and both groups reported having this type of sex to the same extent during the prior month (5.4 times versus 5.7 times, *n.s.*). Older and younger men alike reported comparable levels of arousal by the sight (with scores of 2.7 and 2.5, respectively, on a 1–5 scale, *n.s.*), smell (with scores of 1.8 and 1.6, respectively, on the 1–5 scale, *n.s.*), taste (with scores of 2.1 and 2.2, respectively, on the 1–5 scale, *n.s.*), and feel (both with scores of 2.4 on the 1–5 scale, *n.s.*) of ejaculatory fluids.

Factors associated with HIV risk practices among older and younger men

Table II provides comparisons of the main multivariate predictors of risk taking for older and younger men, for four different outcome measures: the proportion of sex acts involving internal ejaculation, the proportion of anal sex acts involving the use of condoms, the number of sex partners during the preceding 30 days, and the number of times having sex while under the influence of alcohol and/or other drugs during the past 30 days (among sexually active men). The table presents the parameter estimates (*b*) for each item retained in the final multiple-regression equation as well as the standardized coefficients (β , shown in parentheses in the table) for each estimate, so that effects sizes can be compared. The consistent findings obtained in these analyses are that (1) older and younger men tended to have a single factor in common that helped to explain their involvement in different types of HIV risk, but (2) all of the other main factors associated with older and younger men’s risk taking differed.

For example, for older and younger men alike, self-identifying as a sexual “bottom” was found to be a risk factor for engaging in a larger proportion of sex acts involving internal ejaculation. For men aged 50 or older, the only other relevant predictor was the extent to which they experienced HIV information burnout. For men under the age of 40, however, this measure was irrelevant to the proportion of their sex acts in which internal ejaculation occurred. For this latter group, the number of times they reported having sex in public places, their level of arousal from ejaculatory fluids, having been severely maltreated during their formative years, and their sexual orientation were key predictors of how much of their sex involved internal ejaculation. All of these factors were unimportant among older men, though.

As another example, for older and younger men alike, the more sexual abuse they experienced during their formative years, the larger the number of sex partners they tended to report during the preceding month. This was the only factor that the groups had in common. As Table II illustrates, for older men, the key measures to consider for determining their recent number of sex partners were their HIV serostatus, their level of depression, and the extent to which they had experienced problems as a result of their drug use – all factors that did not matter for younger men. Conversely, for younger men, the number of recent sex partners was determined by the amount of time they spent each day searching online for sex partners, their level of self-esteem, their level of condom use self-efficacy, and the extent to which they felt burned out by the HIV information they received – all factors that were found to be unimportant for the older men studied.

Discussion

The present study yielded a number of interesting and important results. First, on almost all measures examined, older men were just as likely as younger men to be involved in practices that placed them at risk for contracting or transmitting HIV. The consistency of this finding was quite striking, and it stands in contrast to much of the recently published literature, which has suggested that younger MSM, rather than their older counterparts, are the ones who are involved in high rates of risky behaviors [53,54]. It is important to point out that it is not that the younger men in this study were not engaging in high rates of risky behaviors because they were; rather, it is noteworthy that men aged 50 and older were every bit as likely to be involved in comparable rates of these same risk behaviors. Older men reported having had the same number of sex partners during the recent past as their younger counterparts did. Older men engaged in anonymous sex, multiple-partner sex, unprotected sex, and sex involving internal ejaculation, as well as a host of other risky behaviors, to the same extent as the younger men did. Many community-based efforts have been undertaken to try to bring about HIV risk reduction among younger MSM, such as Healthmpowerment.org (which uses an Internet-based approach to target younger African American MSM [55]), the Los Angeles Gay and Lesbian Center’s SPOT (Service, Prevention, Outreach, Treatment) program (which targets young Latino MSM [56]), Project Q and Project Q2 (which have targeted MSM aged 16–24 in the Chicago area [57]), the Adolescent Trials Network (which targets 15–22 year old Caucasian, African American, and Latino MSM living in south Florida [58]), and the Mpowerment Project (which has targeted young MSM in the San Francisco area [59]), among numerous others. These efforts have

been quite successful in reaching adolescent and young adult MSM, and at helping these individuals to reduce their involvement in HIV risk practices. Comparable efforts are needed to target older MSM, but at the present time, for the most part, such endeavors are not being undertaken. Given the trend for increasing rates of HIV infections and AIDS diagnoses among older adults in the United States, and the trend for stable or gradually rising rates of HIV infections among American MSM, this oversight is one with dangerous implications from a public health perspective.

As future practitioners develop and implement HIV education, prevention, and intervention efforts targeting older MSM, they would be wise to bear in mind that older men's informational and intervention needs are likely to be very different from those of their younger counterparts. The second part of the analyses undertaken in the present study clearly demonstrated that, for the most part, the factors underlying risk taking among older men are not the same as those underlying risk taking among younger men. This is an important (even if not terribly surprising) discovery, because it highlights the importance of avoiding a "one size fits all" approach to HIV intervention among MSM. Other authors have spoken about the need to provide age-specific educational efforts and interventions targeting HIV risk practices [20,60,61], including the need to implement such programs among MSM [62], and the present study's findings strongly support this recommendation as well.

Future efforts to reduce HIV infections among older MSM will have numerous challenges to overcome. For example, the present study revealed that, for some behaviors (e.g. having sex involving internal ejaculation), HIV information burnout "fuels" risk involvement among older men. If these men come to feel overburdened with information about HIV/AIDS, risk taking, and the need for risk reduction, it is likely that they will become frustrated with repeated attempts to provide new, necessary information to them and, thus, come to tune out HIV risk reduction information. It is, therefore, very important for practitioners targeting older MSM to find ways to keep their messages fresh and relevant, and to provide them in a manner that fosters interest rather than antagonism and boredom (i.e. HIV information fatigue) on the part of their target population.

As another example, the present study found that older men who were HIV-infected were more likely to engage in certain risky practices (e.g. unprotected anal sex, larger number of sex partners) than their HIV-negative counterparts. In recent years, many researchers have been trying to find ways to reduce the spread of HIV by targeting HIV-positive MSM, and they have discussed a variety of challenges they have faced in doing their work as well as the successes of their efforts [63–65]. These scholars' experiences serve as another example of the challenges likely to be faced when developing HIV prevention and intervention efforts targeting older MSM, who are more likely than their younger counterparts to be infected with HIV.

A third example of the types of challenges that interventionists targeting the risk behaviors of older MSM may have to face pertains to partner communication skills. In this study, among older men, poorer partner communication skills were associated with greater involvement in having sex while under the influence of alcohol and/or other drugs. Other studies as well have shown an inverse relationship between partner communication and HIV

risk practices [66,67]. The implication here is that projects trying to reduce HIV risk taking among older MSM may need to work with these men to enhance their comfort level and technical skills regarding broaching the subjects of HIV serostatus and the recency of HIV testing, sexual history, and using/negotiating condoms with their sex partners.

Potential limitations

As with any research study, the present study has a few potential limitations that should be acknowledged. First, this paper was based on analysis of a relatively small sample size. Although the sample size for older-versus-younger men comparisons was adequate ($n = 222$), the multivariate analyses examining the factors associated with HIV risk practices among the sexually active older and younger men were conducted with group sizes that were less than ideal. This necessitated the use of a “relaxed” level of statistical significance for this part of the paper. It would, of course, have been preferable to have access to a more robust sample size, so that greater confidence could be placed upon the statistical findings.

A second limitation is that the younger and older men comprising the research sample were not a precise match for one another demographically, and this may have had some effect upon the results obtained. For example, older participants were more likely than their younger counterparts to be Caucasian. Other analyses from this study (not presented in this paper) have shown that there are racial differences in HIV risk practices, typically showing that Caucasian men engage in higher rates of HIV-related risk than their nonwhite counterparts. As another example, older men were more likely than their younger counterparts to be HIV-positive. Given the larger number of years of sexual activity and their cumulative number of sex partners and potential exposures to HIV-infected partners, this difference is not at all surprising. Nonetheless, it is one that may affect the findings obtained, as HIV-positive men are more likely to engage in risky practices than their HIV-negative counterparts. As a final example, older men in this study were more likely than their younger counterparts to self-identify as sexual “tops” or “versatile tops.” This difference is of minimal concern, though, because analyses from *The Bareback Project* (not presented) have shown that risk involvement is comparable for “top” men and those who consider themselves to be “bottom” or “versatile.” More research is needed to confirm whether or not these differences between younger and older MSM are sample-specific or common to the population under study, *and* to examine the extent to which differences between younger and older MSM do or do not correspond with risk behavior practices. This is a topic that has not been addressed well in previously published studies. (Readers are encouraged to note that the present study’s findings did not change substantially when the differences between older and younger men were controlled in the analyses presented.)

A third limitation is that, as with most research data on sexual behaviors, the data in this study are based on uncorroborated self-reports. Therefore, it is unknown whether participants underreported or overreported their involvement in risky behaviors. The study’s reliance upon self-reported data is acceptable, however, as other authors of previous studies conducted with similar populations have reported good levels of data quality (e.g. reliability and validity) in their research [68]. This is particularly relevant for self-reported measures that involve relatively small occurrences (e.g. number of times having a particular kind of

sex during the previous 30 days), which characterize the substantial majority of the data collected in this study [69]. Other researchers have also commented favorably on the reliability and/or the validity of self-reported information in their studies regarding topics such as condom use [70] and substance use/abuse [71–73].

A fourth potential limitation is the possibility of recall bias. For most of the measures used, respondents were asked about their beliefs, attitudes, and behaviors during the past 7 or 30 days. These time frames were chosen specifically: (1) to incorporate a large enough time frame in order to facilitate meaningful variability from person to person, and (2) to minimize recall bias. Although the author cannot determine the exact extent to which recall bias affected the data, other researchers who have used similar measures have reported that recall bias is sufficiently minimal that its impact upon study findings is likely to be negligible [74]. This seems to be especially true when the recall period is small [75,76], as was the case for the measures used in the present study.

Conclusion

In conclusion, the present study has shown that older MSM who use the Internet to find partners for unprotected sex are involved in a wide variety of behaviors that place them at risk for contracting and/or transmitting HIV. In fact, they are just as involved in most types of behavioral risk as their younger counterparts, necessitating the development and implementation of educational, prevention, and intervention efforts targeted specifically to men of their age. Interestingly, although men aged 50 or older and those under the age of 40 engaged in very similar rates of risky practices, the factors underlying their risk were, generally speaking, quite different. This highlights the importance of developing a solid understanding of older MSM's lives and the factors that lead them to take behavioral risks that could impact their sexual health, and then developing and implementing age-specific prevention and intervention programs that can be effective at reducing risk taking among members of this population.

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Table I.

Comparisons of younger and older men in the sample.

	Younger	Older	Statistical significance
Race	61.1%	87.2%	0.000
Caucasian	10.6	5.5	
African American	15.9	1.8	
Latino	12.4	5.5	
All others combined			
Relationship Status = Involved	24.8%	27.5%	0.642
Sexual Orientation = Gay	91.2%	84.4%	0.124
HIV Serostatus = HIV-Positive	46.9%	68.8%	0.001
Sexual Role Identity	23.0%	44.0%	0.003
Top/Versatile top	23.9	14.7	
Versatile	53.1	41.3	
Bottom/Versatile bottom			
Population Density in Area of Residence	6354.4	7031.5	0.732
Sexual Orientation Outness	74.9%	65.9%	0.049
Educational Attainment = Less than High School Graduate	16.8%	11.9%	0.300

Table II.

A comparison of the factors associated with four specific HIV risk practices among older and younger men.

	Older Men	Younger Men
Proportion of sex acts involving internal ejaculation		
Number of times recently having sex in public	—	0.02 (0.25) **
Level of arousal by ejaculatory fluids	—	0.01 (0.23) *
Severely maltreated during formative years	—	0.13(0.21) *
Sexual orientation = gay	—	0.22(0.17) †
Sexual role identity=bottom	0.07 (0.32) **	0.10(0.17) †
HIV information burnout	0.09(0.17) †	—
Proportion of anal sex acts involving the use of condoms		
Arousal from seeing ejaculatory fluids	—	0.04(0.15) †
Attitudes toward using condoms	0.13 (0.27) **	0.23 (0.56) ***
HIV serostatus= HIV-positive	-0.22 (0.34) **	—
Number of recent sex partners		
Amount of time spent per day searching for sex partners online	—	0.02 (0.26) **
Level of self-esteem	—	12.45 (0.48) ***
Condom use self-efficacy	—	-11.91 (0.42) ***
HIV information burnout	—	5.96(0.19) *
Amt. of sexual abuse during formative years	5.61 (0.38) ***	3.79 (0.22) **
HIV serostatus = HIV-positive	5.81 (0.24) **	—
Level of depression	-0.18(0.35) ***	—
Number of drug problems experienced	0.51 (0.16) †	—
Number of times having sex while “under the influence”		
Sexual role identity=bottom	—	3.44(0.16) †
Number of drug problems in past 30 days	8.78 (0.30) **	3.54 (0.29) **
Race = Caucasian	-16.55 (0.20) *	—
Number of persons known to respondent, who died from AIDS	0.04(0.19) *	—
Level of impulsivity	25.96 (0.42) ***	—
Level of optimism about the future	11.78(0.26) *	—
Level of partner communication	-12.93 (0.23) *	—

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$

† $p < 0.10$.